

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/001510

A. CLASSIFICATION OF SUBJECT MATTER IPC7: C12N 15/31, C07K 14/315, C12P 21/02, C12N 15/63, C07K 19/00, A61K 39/09, A61P 31/04, G01N 33/569, A61K 38/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC7: C12N 15/31, C07K 14/315, C12P 21/02, C12N 15/63, C07K 19/00, A61K 39/09, A61P 31/04, G01N 33/569, A61K 38/16

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
GeneSeq, Delphion, Pubmed, Canadian Patent Database. Keywords: Streptococcus, pyogenes, use

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	BERES, SB ET AL. "Genome sequence of a serotype M3 strain of group A Streptococcus: Phage-encoded toxins, the high-virulence phenotype, and clone emergence" PROC. NAT. ACAD. SCI. USA. 99(15): 10078-10083. July 2002 also disclosed as GenBank accession Nos: AE014137 and AAM78661.1.	1-15, 17-20
Y		23, 25-29, 31-34, 36 and 37
X	FERRETTI, JJ ET AL. "Complete genome sequence of an M1 strain of Streptococcus pyogenes" PROC. NAT. ACAD. SCI. USA. 98(8): 4658-4663. April 2001 also disclosed as Genbank accession Nos: AE006478 and AAK33197.1.	1-15, 17-20
Y		23, 25-29, 31-34, 36 and 37

[x] Further documents are listed in the continuation of Box C.

[x] See patent family annex.

* Special categories of cited documents :	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"B" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search

05 April 2005 (05-04-2005)

Date of mailing of the international search report

21 April 2005 (21-04-2005)

Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
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Authorized officer
Robert Rymerson (819) 956-9972

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/001510

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	WO2002/34771 CHIRON S.P.A. (Telford J et al.) 02-05-2002 see SEQ ID NO: 6345 (nucleotide) and SEQ ID NO: 6346 (peptide) also disclosed as GeneSeq accession Nos: ABN69216 and ABP28585	1-20, 23, 25-29, 31-34
Y		36, 37
X	WANG. L ET. AL. "Prokaryotic essential gene #31933" GENESEQ DATABASE ACCESSION No: ACA50276 19-06-2003 (from WO2002/77183; SEQ ID NO: 38146) (ELITRA PHARM INC.)	1-15
X	WANG. L ET. AL. "Protein encoded by prokaryotic essential gene #31933" GENESEQ DATABASE ACCESSION No: ABU46406 19-06-2003 (from WO2002/77183; SEQ ID NO: 74330) (ELITRA PHARM INC.)	17-20
Y		23, 25-29, 31-34, 36, 37
P,Y	US2004/0071729 A1 ADDERSON E AND BOHNSACK J 15-04-2004 see whole document	23, 25-29, 31-34
Y	CA2413576 A1 SHIRE BIOCHEM INC. (Martin D et al.) 17-01-2001 see pp. 15-23, and examples	23, 25-29, 31-34
Y	CA2438921 A1 SHIRE BIOCHEM INC. (Martin D et al.) 29-08-2002 see pp. 15, 18, 21, 23 and examples	23, 25-29, 31-34
Y	CA2432525 A1 SHIRE BIOCHEM INC. (Martin D et al.) 27-06-2002 see pp. 17, 18, 21, 23-25, and examples	23, 25-29, 31-34
	continued on extra sheet	

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2004/001510

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
WO0234771	02-05-2002	AU1412702 A CA2425303 A1 EP1328543 A2 GB0026333D D0 GB0028727D D0 GB0105640D D0 IL154853D D0 MXPA03003690 A WO0234771 A2	06-05-2002 02-05-2002 23-07-2003 13-12-2000 10-01-2001 25-04-2001 31-10-2003 05-05-2004 02-05-2002
EP974658		AT258601T T AU716913 B2 AU6423198 A CA2284555 A1 DE69821344D D1 DE69821344T T2 DK974658T T3 EP0974658 A1 JP3515314B2 B2 US6245906 B1 WO9842845 A1	15-02-2004 09-03-2000 20-10-1998 01-10-1998 04-03-2004 22-07-2004 15-03-2004 26-01-2000 05-04-2004 12-06-2001 01-10-1998
US2004071729	15-04-2004	AU8116801 A CA2417357 A1 EP1320542 A2 US2004071729 A1 WO0212294 A2	18-02-2002 14-02-2002 25-06-2003 15-04-2004 14-02-2002
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CA2438921	29-08-2002	BR0207447 A CA2438921 A1 EP1362106 A2 JP2004531235T T US2003049271 A1 WO02066650 A2	29-06-2004 29-08-2002 19-11-2003 14-10-2004 13-03-2003 29-08-2002

continued on Extra Sheet

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/001510

CONTINUATION OF BOX III:

Group I: Claims 1-37, all partially, are directed to polymucleotides corresponding to the SHB GAS 102 polypeptide from *Streptococcus pyogenes* and variants thereof (SEQ ID NOS: 1, 2, 21-28); vectors and host cells comprising said polymucleotides; the SHB GAS 102 polypeptide and variants thereof; chimeric polypeptides and pharmaceutical compositions comprising said polypeptide; a process for producing said polypeptide; methods for prophylactic or therapeutic treatment of *S. pyogenes* infection using said pharmaceutical compositions; methods of diagnosing *S. pyogenes* infections using said polypeptide; uses for said pharmaceutical compositions; and kits comprising said polypeptide.

Group II: Claims 1-37, all partially, are directed to polymucleotides corresponding to the SHB GAS 103 polypeptide from *Streptococcus pyogenes* and variants thereof (SEQ ID NOS: 3, 4, 29-36); vectors and host cells comprising said polymucleotides; the SHB GAS 103 polypeptide and variants thereof; chimeric polypeptides and pharmaceutical compositions comprising said polypeptide; a process for producing said polypeptide; methods for prophylactic or therapeutic treatment of *S. pyogenes* infection using said pharmaceutical compositions; methods of diagnosing *S. pyogenes* infections using said polypeptide; uses for said pharmaceutical compositions; and kits comprising said polypeptide.

Group III: Claims 1-37, all partially, are directed to polymucleotides corresponding to the SHB GAS 104 polypeptide from *Streptococcus pyogenes* and variants thereof (SEQ ID NOS: 5, 6, 37-44); vectors and host cells comprising said polymucleotides; the SHB GAS 104 polypeptide and variants thereof; chimeric polypeptides and pharmaceutical compositions comprising said polypeptide; a process for producing said polypeptide; methods for prophylactic or therapeutic treatment of *S. pyogenes* infection using said pharmaceutical compositions; methods of diagnosing *S. pyogenes* infections using said polypeptide; uses for said pharmaceutical compositions; and kits comprising said polypeptide.

The multiple inventions identified above are not linked so as to form a single inventive concept and consequently do not comply with Rule 13 of the PCT.

SHEET 2, BOX C, CONTINUED

- A CA2413450 A1
SHIRE BIOCHEM INC.
(Hamel J et al.)
27-12-2001
- A CA2356836 A1
SHIRE BIOCHEM INC.
(Martin D et al.)
06-07-2000
- A EP0974658A1
FUSO PHARMACEUTICAL INDUSTRIES LTD
(Ueyama H et al.)
26-01-2000

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/001510

Patent Family Annex continued

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
CA2432525	27-06-2002	AU1686302 A BR0116704 A CA2432525 A1 EP1343895 A2 JP2004524014 T T US2004097706 A1 WO250107 A2	01-07-2002 23-12-2003 27-06-2002 17-09-2003 12-08-2004 20-05-2004 27-06-2002
CA2413450	27-12-2001	AU7038101 A BR0111886 A CA2413450 A1 CN1449446 A CZ20030154 A3 EP1303612 A2 HU0301656 A2 IL153558D D0 JP2004501618T T MXPA03000103 A NO20026121 A PL360413 A1 US2003077293 A1 WO0198334 A2	02-01-2002 24-06-2003 27-12-2001 15-10-2003 18-06-2003 23-04-2003 28-08-2003 06-07-2003 22-01-2004 19-06-2003 13-02-2003 06-09-2004 24-04-2003 27-12-2001
CA2413576	17-01-2002	AU7227001 A BR0112497 A CA2413576 A1 EP1297145 A2 JP2004502446T T US2003165528 A1 WO0204495 A2	21-01-2002 25-11-2003 17-01-2002 02-04-2003 29-01-2004 04-09-2003 17-01-2002

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2004/001510

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons :

1. Claim Nos. : 25-31
because they relate to subject matter not required to be searched by this Authority, namely :
Although claims 25-31 are directed to methods of medical treatment of a human/animal body which the Authority is not required to search under Rule 39.1(iv) of the PCT, the search has been carried out based on the alleged effects of the compounds referred to therein.
2. Claim Nos. :
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically :
3. Claim Nos. :
because they are dependant claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows :

see extra sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos. :
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim Nos. :
claims 1-37, partially (Group I, see extra sheet)
Remark on Protest The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.